

# WATER POLLUTION

# CONTROL PLANT

## **Treatment**

The City's Water Pollution Control Plant produces just over 16 million gallons per day (MGD) of high grade effluent. Like all standard plants, it is designed to remove conventional pollutants such as biodegradable organic matter, certain small solids and ammonia. The City's pretreatment program ensures that industry remove certain, industry-specific pollutants that are toxic to biological activity at the plant through pretreatment prior to discharge to the sanitary collection system.

Treatment provided by the Water Pollution Control Plant consists of three unit processes: primary, secondary and tertiary treatment.

The primary process provides pumping, primary sedimentation, solids recovery and digestion, and the use of methane produced as a byproduct of digestion to fuel engine-driven pumps and electrical generators.

The secondary process consists of 440 acres of facultative ponds that oxidize the primary effluent, reducing the remaining organic wastes in the water to their more basic components. This is really nature being given time to carry out a natural process in which algae grows and uses dissolved organic matter in the wastewater as a food source.

The tertiary process includes removal of the algae and ammonia formed as by-products of the secondary process, filtration, disinfection and discharge of the treated effluent to San Francisco Bay.

Ammonia is removed in "fixed growth reactors" -- tall tanks filled with plastic media on which particular types of microorganisms grow. These microorganisms take up the ammonia and convert it to nitrate, which is not harmful to aquatic organisms at the concentrations present in the effluent. Effluent from the secondary process is pumped up into the fixed growth reactors and trickled over the media, allowing the conversion to take place.

Effluent from the fixed growth reactors then flows to the air flotation tanks. Algae is removed here by the addition of polymer and dissolved air which cause the algae to coagulate and float to the top of the tank. It is removed by skimming. A portion of the removed algae is recovered and sent to the digesters for methane production. A project is underway to allow a much greater portion of the algae to be sent to the digesters for greater methane production.

To remove remaining fine particles, the effluent stream is then run through multimedia filters containing a layer of anthracite coal and a layer of sand. The very last step before discharge is disinfection of the effluent. This is accomplished by adding chlorine and allowing contact time sufficient to achieve the necessary reduction of potentially pathogenic organisms in the water.

Since chlorine is harmful to aquatic organisms, it is removed prior to discharge by the addition of sulfur dioxide which neutralizes chlorine and renders it harmless.

### Treatment Plant Capacity

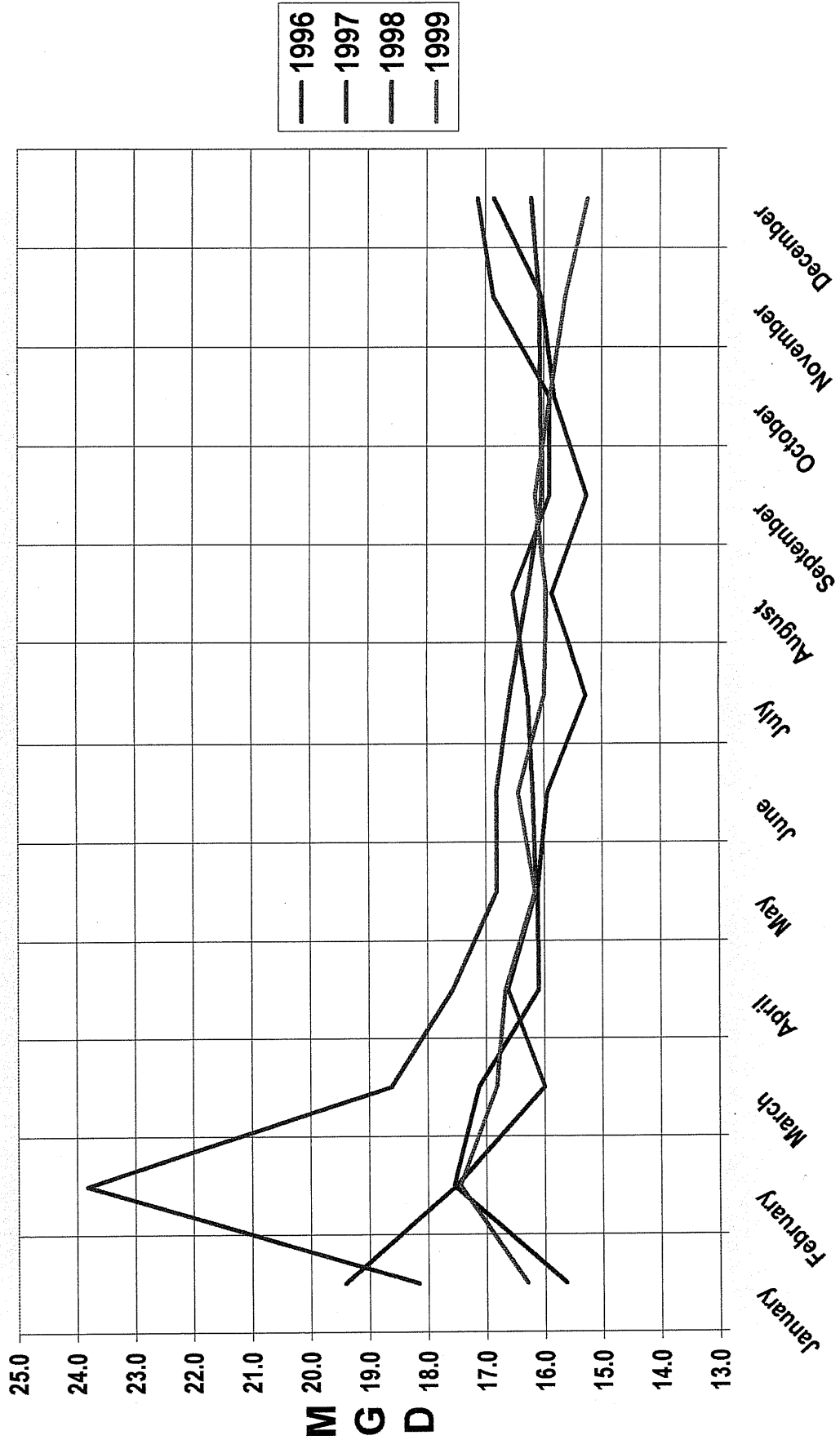
The treatment plant is designed to treat 29.5 million gallons per day (MGD). At the time of the 1983 Sanitary Sewer Sub-element, tremendous building and growth were expected for Sunnyvale. Projections indicated that flows might reach 28 MGD for controlled growth, or 34 MGD if Sunnyvale reached total build out. Discussion was included in the sub-element about controlling growth as appropriate to ensure that the capacities of the collection system and treatment plant were not exceeded.

A great deal of the anticipated growth has occurred, but in 2001 much of the building that is underway involves rebuilding on previously-developed parcels. Projections made in 2001 indicate that flows may not continue to increase significantly between now and 2020. This reduction in projections for flows at build out is attributed to changes in land use, changes in water consumption patterns, and the overall reduced rate of growth.

The following table shows flow values, actual and projected, from the 1983 Sanitary Sewer Sub-element. Also included are those calculated in the 2001 Sewer Rate and Cost of Service Study conducted by Bartle Wells and Associates. Flows developed for this study were estimated for customer categories using water billing records and the estimated percentage of water purchased that reaches the wastewater system. The flow values developed for the 1983 Sanitary Sewer Sub-element were based on land use/zoning and other factors that estimated sewage flow generation.

<b>Estimated Wastewater Flows</b>			
(all values in millions of gallons per day)			
	<b>1983 Estimates</b>		<b>2001 Estimates</b>
	Existing Flow	Projected Flow at Build-Out	Existing Flow
Residential	9.8	11.9	10.8
Industrial	9.1	13.4	2.0
Commercial	1.5	3.0	2.6
(I/T)			0.8
<b>TOTAL</b>	<b>20.4</b>	<b>28.3</b>	<b>16.2</b>

# History of Average Influent by Month (mgd)



As stated, the two methods used to estimate flows in the table above are different, so the values are not directly comparable. In general, though, it can be seen that industrial flows have significantly decreased. This is the result of the changeover in local industry during the past 20 years from primarily manufacturing (including canneries) to knowledge-based industries. Potential future flows directly correlate to the types of industries that may come into the community in the future. A change in the prevalent type of industry, or just a few new large users, could have a significant impact on the total flow.

Plant capacity appears adequate based on use in 2001 and the updated projections. The Environmental Protection Agency requires that when flows reach 75% of design capacity, agencies begin to evaluate future needs and develop plans for expansion, if appropriate. Based on 2001 figures, it is not anticipated that this milestone will be reached in Sunnyvale and it will not be necessary to begin an evaluation to identify ways to provide additional capacity at the Water Pollution Control Plant during the next five to 10 years.

Sunnyvale has in the past entered into discussions with neighboring cities regarding the potential to develop an agreement for utilization of a small portion of the City's currently unused treatment capacity. To date, no specific arrangements have been made, but this continues to be an option for the City, should it find it would be advantageous to do so.

### **Treatment Plant Infrastructure**

Portions of the Water Pollution Control Plant were first constructed in 1954 and are now nearly 50 years old. In addition, the nature of wastewater treatment itself presents an adverse environment for facilities and equipment. In order to maintain this infrastructure and ensure the ongoing ability to meet effluent and recycled water quality requirements, it is necessary to have in place a strategy for the ongoing refurbishment and replacement of components of the plant.

Partial funding has been put aside in the plant's Infrastructure Fund, and Capital Improvement Program (CIP) funds are earmarked to complete the process of inventorying all plant facilities and equipment, estimating remaining useful life, and taking care of most repair and replacement. The effort to address infrastructure needs will include assessing the physical condition of facilities, prioritizing replacement needs based on wear, remaining useful life, and risks related to failure, and then funding and implementing the repair and replacement, over time and on an ongoing basis.

NPDES permit conditions also require that the unit processes used at the Water Pollution Control Plant be periodically evaluated for efficiency and effectiveness, as new technologies are developed. Changes in safety laws towards increasingly more stringent requirements also can have an impact on the cost of providing treatment by specific unit processes. This type of evaluation is funded and completed through the CIP in the

Special Projects category. Unit processes (primary, filtration, disinfection, etc.) are targeted for study in individual capital improvement projects based on triggers such as significant changes in the cost of a process or changes in technology.

## **Energy Production**

A recent addition to the plant is two 800 kilowatt engine generators which produce electricity by burning landfill bio-gas (methane), and which will soon also be able to use methane produced in the digesters for energy production. These engine generators have been configured to allow the export of power to the state power grid when production exceeds the power needs of the Water Pollution Control Plant. Because plant power needs are great, it is more cost-effective to use the methane produced as a by-product rather than to fulfill the plant's power needs by purchasing power from PG&E or another outside supplier. Export of power will occur only when excess is available. Methane production in the landfill is not as great in 2001 as anticipated, so there may not be excess available for export. However, this potential exists and efforts to maximize methane production in the landfill and in the digesters is an ongoing process.

## **Pretreatment**

The City has an industrial wastewater pretreatment program, conforming to federal regulations, to monitor and control various pollutants. Most commercial users do not need to pretreat their wastes.

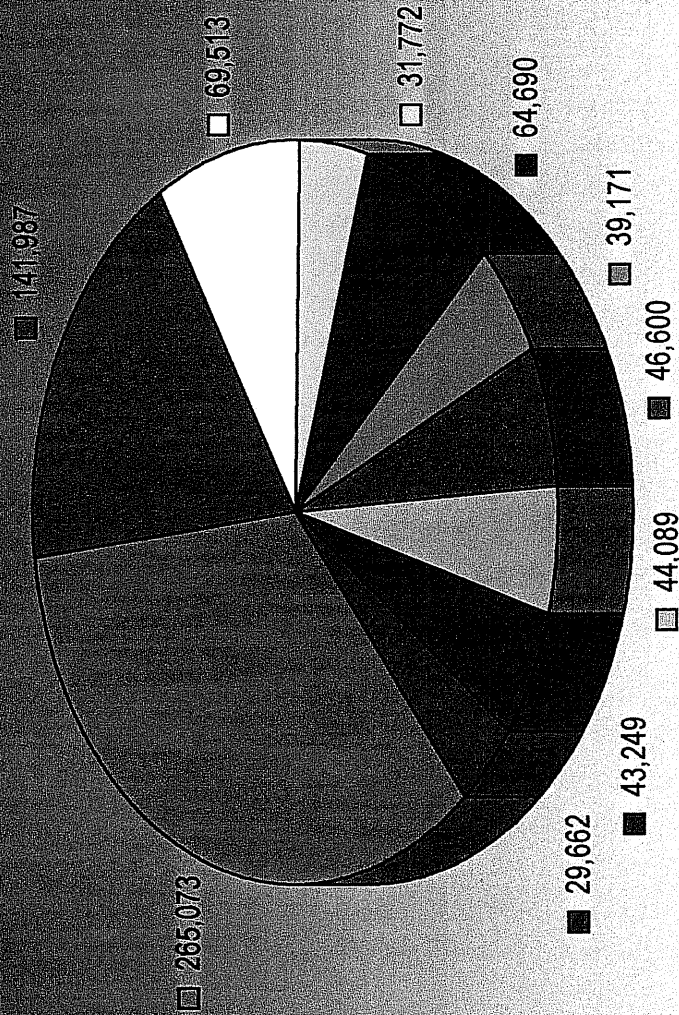
Restaurants are one exception. They are required to control oils and greases in their discharge to keep the concentration of grease below the level of 100 parts per million (ppm). Grease traps are required in all restaurants, but are frequently not maintained properly. The release of excess grease can, and has, clogged the City's sewers. When this occurs, special cleaning is required by City forces and the discharger (if identified) is billed for all cleaning costs.

Companies such as Lockheed-Martin, Advanced Micro Devices, Toshiba, and Siemens Corporation have implemented sophisticated pretreatment programs. These programs are designed to reduce heavy metal emissions into the City wastewater management system. As a result of these efforts by industry and the City's Industrial Waste Inspection Program, the amount of process water discharged by permitted industries has been reduced from 6,710 million of gallons in 1997/98 to 6,076 million of gallons in 2000/01.

### Top 10 Customers by Revenue

Customer	2000/01 Projected Revenues	2000/01 Rate per ccf	1999/00 Annual Flow (ccf)	Average Concentration		
				SS	NH3N	TOC
Lockheed Martin	\$476,866	1.799	265,073	30.5	3.8	15.3
Advanced Micro Devices	\$218,944	1.542	141,987	28.2	13.5	11.8
Rohm Corporation	\$117,407	1.689	69,513	1.2	8.8	8.6
Northrop Grumman Corp	\$111,520	3.510	31,772	12.6	19.1	745.0
US Filer/Polymetrics	\$99,040	1.531	64,690	65.0	1.4	23.2
Lipton (Van Den Bergh)	\$84,492	2.157	39,171	83.3	1.7	163.9
Philips Semiconductor	\$73,069	1.568	46,600	7.3	5.4	10.4
Rohm Device USA	\$70,454	1.598	44,089	6.6	1.6	3.4
Maxim Integrated Products	\$57,906	1.339	43,249	0.8	0.1	5.6
Perkin Elmer	\$47,815	1.612	29,662	0.5	01	1.9
<b>Total</b>	<b>\$1,357,513</b>		<b>775,805</b>			

# Top 10 Customers' Annual Flow (ccf)



- Lockheed Martin
- US Filter/Polymetrics
- Maxim Integrated Products
- Advanced Micro Devices
- Lipton (Van Den Bergh)
- Perkin Elmer
- Rohm Corporation
- Philips Semiconductors
- Northrop Grumman Corp.
- Rohm Device USA

# **DISCHARGE AND REUSE**

Now that the Water Pollution Control Plant is producing recycled water on a regular basis, there are two sets of water quality standards that must be met. For discharge to the Bay, requirements are spelled out in the NPDES permit issued to the plant for discharge to waters of the state. For production of recycled water, requirements are spelled out in California Code of Regulations Title 22 related to recycled water for full contact, unrestricted use.

## **Effluent Quality for Discharge**

NPDES permit requirements are updated every five years. The plant's permit was last renewed in 1998 and will be due for renewal again in 2003. As discussed earlier in the section Regulatory Climate, future discharge requirements can be anticipated to change relative to a list of toxic pollutants. The Water Pollution Control Plant is not specifically designed to remove these types of pollutants which occur in very minute quantities (often in the parts per billion or parts per trillion range). Therefore, achieving and maintaining compliance will be based on working within the new watershed/stakeholder approach to negotiate the best possible permit conditions for the City. These negotiations will be based on the best available scientific data related to the pollutant, both in terms of the sources and fate of the pollutant, and on the effects of the pollutant in the environment. Meeting effluent requirements will then involve identifying sources of the pollutant and addressing them either through pretreatment requirements, if appropriate, or by modification of treatment processes to enhance removal. Only if all other alternatives are exhausted would the addition of new treatment facilities be considered, since this would likely be the most expensive alternative.

The quality for effluent discharged by Sunnyvale, as well as the other neighboring cities, is substantially higher than national, federally-mandated secondary treatment standards. This is a necessity because of the characteristics of the receiving waters: the sloughs and the southern portion of San Francisco Bay. There is relatively little dilution available in the shallow waters, and the narrowing of the bay near Dumbarton Bridge severely limit circulation of water from the north bay.

## **Location of Discharge**

The Sunnyvale Water Pollution Control Plant discharges to the South San Francisco Bay, via the lower extremity of the Santa Clara Valley Water District's Sunnyvale West Channel, through the Guadalupe and Sunnyvale Sloughs, and then on to the Bay. At the time of the 1983 Sanitary Sewer Sub-element, the discharge of treatment plant effluent was prohibited south of the Dumbarton Bridge in the Basin Plan for the South San Francisco Bay and in NPDES permits for South Bay plants. The prohibition existed



because of the shallow waters and the lack of mixing and dilution in the South Bay and the effect this could have on the ability of the receiving water to withstand discharge without detrimental impacts. The three South Bay dischargers formed the South Bay Dischargers Authority (SBDA) to cooperatively find an economically-feasible solution to the shallow water discharge and to avoid the need to build a “super sewer” to transport all three effluents north of the Dumbarton Bridge for discharge. A five-year study was conducted to monitor conditions in the South Bay and to determine the best solution.

A settlement agreement was reached in which Sunnyvale and the two other South Bay plants agreed to various conditions and permit requirements which would be protective of the South Bay ecosystem. One of these requirements was to actively proceed with development of the recycled water system and to maximize the reuse of recycled water, thereby reducing the discharge of treated effluent. Development of the recycled water system and marketing of the product has, consequently, been a high priority for the City.

## **Reuse As Recycled Water**

The Water Pollution Control Plant produces about 16 million gallons per day (MGD) of high quality effluent, which represents an untapped, drought-resistant, local water resource. Recycling water for landscape irrigation and other purposes helps to conserve and augment potable water supplies and reduces the possible need for restrictions on water use during periods of drought. By reducing the overall volume of water discharged to the Bay, the mass of copper and other constituents in that discharge is also reduced. For this reason, the City’s Water Recycling Program constitutes a partial basis for the exception to the Regional Water Quality Control Board’s Basin Plan prohibition on discharges to shallow water granted to the Water Pollution Control Plant.

## **Water Recycling Program Background**

In the mid 1980s, the City began investigating the feasibility of supplying recycled water for use throughout the City. In October 1991, the City Council approved \$14.5 million to establish a program that would develop and distribute this valuable resource to various parts of the City. Subsequent funding authorizations have brought Sunnyvale’s total investment to approximately \$20 million.

Planning, design, and construction of facilities for the production and distribution of recycled water proceeded steadily throughout the 1990s, under the Department of Public Works. An underlying principle reflected in the design of the initial facilities was that the system should have the capacity to ultimately recycle up to 100% of the Water Pollution Control Board’s total flow. Initial planning and feasibility studies determined that this volume (13 MGD at that time) exceeded projections demand that could reasonably be served within Sunnyvale itself and that attaining this goal would involve exporting

recycled water outside of city limits. The distribution system's main east-west header pipeline and one of the north-south mains were sized to accommodate flows greater than the projected to serve Sunnyvale's needs.

Construction of the distribution system focused first on large publicly-owned sites (Sunnyvale Golf Course, Baylands Park) and the Moffett Park industrial area immediately south of the Water Pollution Control Plant. By summer of 2001, recycled water was being delivered to more than 60 public and private sites throughout northern Sunnyvale. During the irrigation season (April through November) the system delivers more than one million gallons per day. The primary use of recycled water is for landscape irrigation with lesser amounts used for ornamental ponds, fountains, and other approved uses. The 2001 recycled water distribution system is shown on the following page.

Facilities at the Water Pollution Control Plant allow production of recycled water at rates up to 8 MGD (5600 gallons per minute). Because of the increased cost for treatment to disinfected tertiary standards, recycled water is not produced continuously, but rather is synchronized to periods of heavy demand. Off-peak demand is supplied from the two million gallon San Lucar recycled water storage tank and pumping facilities, where were completed in 2001. The WPCP coordinates its efforts with Field Services to ensure a continuous and reliable supply.

## **Regulatory Requirements for Recycled Water**

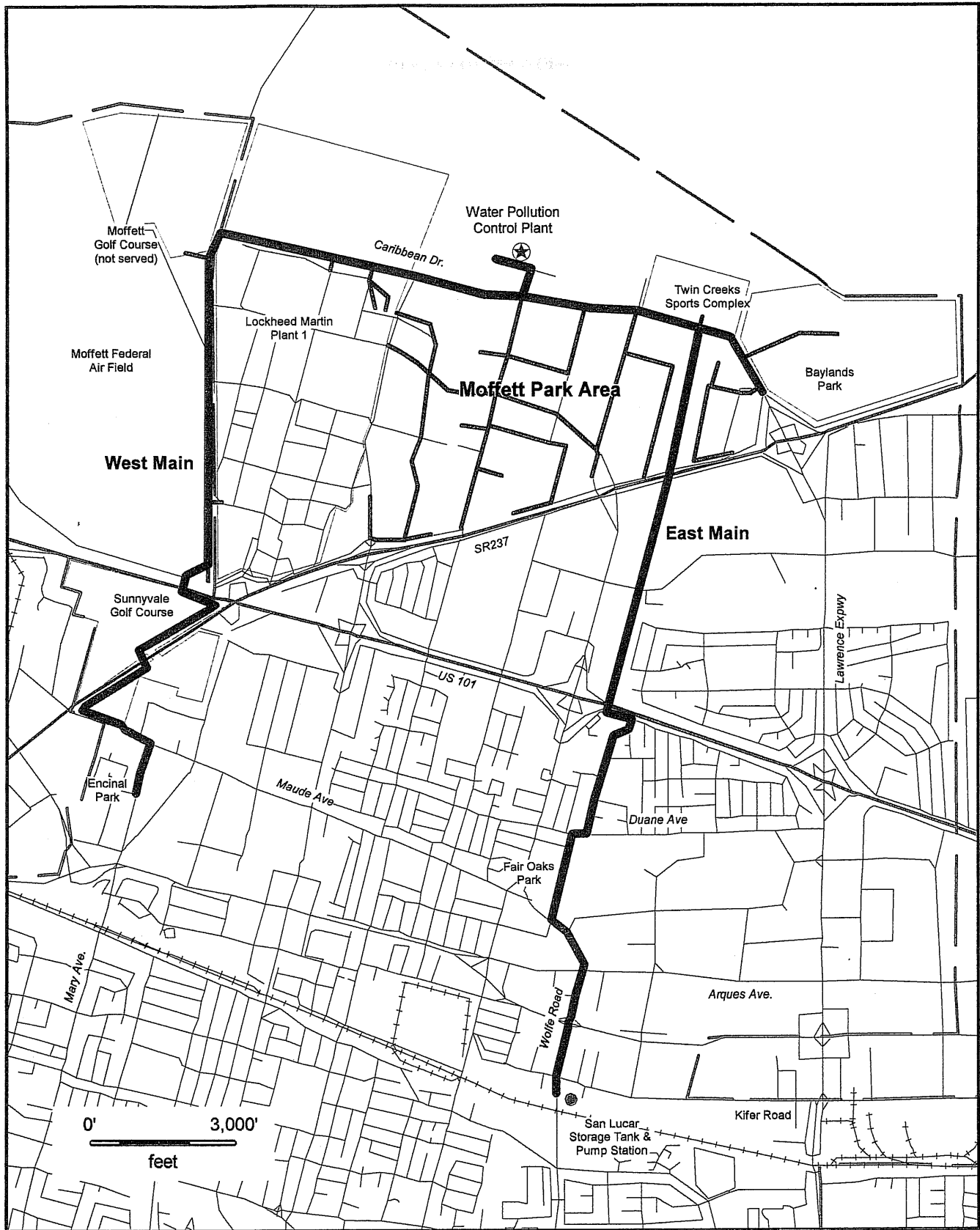
Regulatory requirements governing the production, distribution, and use of recycled water are contained in the California Code of Regulations Title 22 (Water Recycling Criteria) and Title 17 (Backflow Prevention). The Regional Water Quality Control Board has issued a Water Reuse Order (similar to an NPDES permit) to the City that reflects these requirements. The City, in turn, issues use permits to individual customers and monitors the use of recycled water by these customers to ensure that all regulatory requirements are met.




The Water Pollution Control Plant is the producer of recycled water, while the City's Field Services Division is responsible for distribution and monitoring of end uses. Under Title 22, the end uses (and corresponding degree of public exposure) dictate the quality of recycled water required. The WPCP produces the highest quality recycled water defined in Title 22, referred to as "disinfected tertiary" or "unrestricted quality." This quality is approved for landscape and agricultural irrigation, ornamental and recreational impoundments, car washing, firefighting, and many other uses. Frequent monitoring at the WPCP ensures that water quality requirements are always met.

## Future Opportunities for Recycled Water Use

Opportunities for expanded use of recycled water are described in the City's Recycled Water Master Plan (EOA, Inc, December 2000). This plan anticipates that the program's efforts will focus in the short-term on infill sites that can be served by the existing distribution system, as these are the most cost effective. Infill sites include additional services at Lockheed-Martin (baseball fields and building landscaping), fields at Twin Creeks Sports Complex, new commercial sites in the Moffett Park Area, and several City parks. For the long term, the Plan describes a phased expansion of the system into the central and southern portions of the City, with City Parks providing the "anchor" sites. The Plan also describes how an expanded system could accommodate a streamflow augmentation project on Stevens Creek.

Landscape irrigation will likely remain the primary end use of recycled water, until a major "alternative" project such as streamflow augmentation emerges. Nevertheless, the City will continue to encourage other approved uses, in an effort to increase overall production and deliveries of recycled water.



	<p><b>Recycled Water Distribution System</b></p> <p>City of Sunnyvale Water Recycling Program</p>	<p><b>Legend</b></p> <p>Main Lines (12" - 36") </p> <p>Secondary Lines (6" - 10") </p>	<p>Figure No.</p>
			<p>EOA, Inc.</p>
			<p>Sept. 2001</p>

## Distribution System for Recycled Water

The Sunnyvale Water Recycling Program is designed to distribute recycled water throughout the City for irrigation of schools, parks, and golf courses, and groundwater recharge. The system could extend beyond the City limits to serve entities in Los Altos and Cupertino if economically feasible. The City is also a participant in a regional project to study cooperation between Bay Area recycled water producers, the delivery of recycled water across jurisdictional boundaries, and the prioritization of projects for state and federal grant funding.

The City of Sunnyvale is implementing the water recycling distribution project in two phases. Phase I, now complete, is a pipeline that carries treated effluent from the Water Pollution Control Plant to serve Lockheed, Moffett Field Golf Course, and the Sunnyvale Golf Course. When complete, Phase II will consist of a series of pipelines to serve other parks and industrial areas in the north part of the City. The total potential average annual recycled water demand for both phases, including landscape irrigation, industrial, commercial, and government, is estimated at 3.5 MGD (0.7 MGD for Phase I and 2.8 MGD for Phase II). The ability to utilize up to 100% (12.5 to 18.5 MGD) of the output of the Water Pollution Control Plan will depend on available opportunities outside the City limits.

Baylands Park distribution facilities were constructed to include 24- to 36- inch diameter pipelines that extend from the Water Pollution Control Plant and Borregas Avenue east along Caribbean Drive to Baylands Park. Distribution pipelines will be constructed west and south to convey recycled water throughout the City. Phase I also included a pump facility at the WPCP and a pipeline from the WPCP and Borregas west to serve Lockheed/Martin, the golf course and agricultural lands at Moffett Federal Air Field, Caltrans freeway landscape, and the Sunnyvale Golf Course.

Phase II, consisting of 88,000 feet of pipeline and a pumping/storage plant, has been divided into three subphases. Phase IIa, constructed in 1996, covers the industrial area north of Highway 237. Phase IIb, completed in 2001, includes a trunk pipeline southward down the East Flood Control Channel to Wolfe Road and Kifer Road, a pumping/storage facility at the Industrial Well Plant with a 2 million ground level storage tank, and additional distribution pipelines. Phase IIc is planned to extend eastward from Wolfe Road along Arques Avenue and into the East Duane Industrial area north of Arques Avenue.

Although not budgeted as of 2001, additional phases would include building facilities to serve the west side of Sunnyvale, extensions into Cupertino and Los Altos, and the east trunk line southward from Kifer Drive.

## **Production and Reuse of Biosolids**

The City of Sunnyvale manages and operates a biosolids treatment program, in accordance with the U.S. Environmental Protection Agency's 40 CFR 503 requirements, to beneficially reuse biosolids removed at the Water Pollution Control Plant.

The treatment process involves the collection of solids from primary clarifiers and portions of algae float from secondary clarifiers. These solids are anaerobically digested at 100 degrees Fahrenheit and held for a detention time of approximately 30 days. Solids are then removed from the digesters, conditioned with polymer, and dewatered on the gravity flow tile drainage system to approximately 15% solids. They are spread on a paved drying area where they are solar dried to 50%-70% solids, at which time they are ready to be hauled off site for beneficial reuse.

The 16,000-square-foot tile drying area and approximately two-acre paved drying area were constructed in 1994 at a cost of \$2.7 million. The biosolid dewatering system has been in operation since 1995 and has operating costs of \$300,000 annually.

A three-year contract (11/99 to 11/02) is in place for the removal and beneficial reuse of biosolids from the Water Pollution Control Plant. The biosolids are used at the Forward Landfill in Stockton as alternate daily cover. Under previous contracts, biosolids have been beneficially used as soil amendment in Contra Costa County. They have also been surface applied at the Sunnyvale Biosolid Monofill, located on approximately seven acres south of the SMaRT station between the closed east hill and south hill landfills.

# **FINANCIAL AND ECONOMIC** **ASPECTS OF WASTEWATER** **MANAGEMENT**

## **The General Plan and Wastewater Management**

In Sunnyvale, the General Plan serves as the City's vision for both short and long-term policy setting, budget planning, service delivery and evaluation. While most cities are required by state law to prepare a general plan outlining the direction of their community, few, if any, use the document as Sunnyvale does -- as a foundation of all City planning and budgetary action.

Sunnyvale's General Plan is composed of seven elements: Transportation, Community Development, Environmental Management, Public Safety, Socio-Economic, Cultural, and Planning and Management. The Wastewater Management Sub-Element can be found under the Environmental Management element of the General Plan. Each element has a series of sub-elements in which long-range policy-making is developed and ultimately put into action via legislation (City ordinance, zoning changes, etc.) and budgetary allocations (capital improvement and infrastructure projects, funding of additional staff, etc.).

The City budget is viewed as an instrument to implement the General Plan. It is a service-oriented budget that focuses on the desired level of service provided to the community at a specific cost. The City budget is designed to communicate whether services provided implement the goals, policies, and direction that the Council believes is important to the community, as reflected in the City's long-range plan.

## **Management of the Wastewater System and Economic Development**

Availability of adequate wastewater processing capacity is of critical importance to a variety of industries in Santa Clara Valley, ranging from the fabrication of silicon chips to various irrigation uses. As growth in population continues, businesses are becoming more sensitive to issues of water availability, utility rates and other development related fees when deciding on a location for their operations. The City's Economic Development Program is specifically focused on attracting and retaining key businesses in the City of Sunnyvale.

## **The Wastewater Management Fund**

The Wastewater Management Fund is one of five utility funds (others are the Water Supply and Distribution Fund, Solid Waste Management Fund, SMaRT Station® Equipment Replacement Fund, and SMaRT Station® Operating Fund) which make up the City's Combined Utility Fund. The Combined Utility Fund approach is used for budget discussion and presentation only. The Combined Utility Fund maintains balances that are adequate to fund operating service levels, contingencies, and capital improvements over a 20-year time frame. This approach, which emphasizes long term planning and appropriate allocations to contingencies/reserves, has allowed the City to minimize and smooth the impact of rate increases.

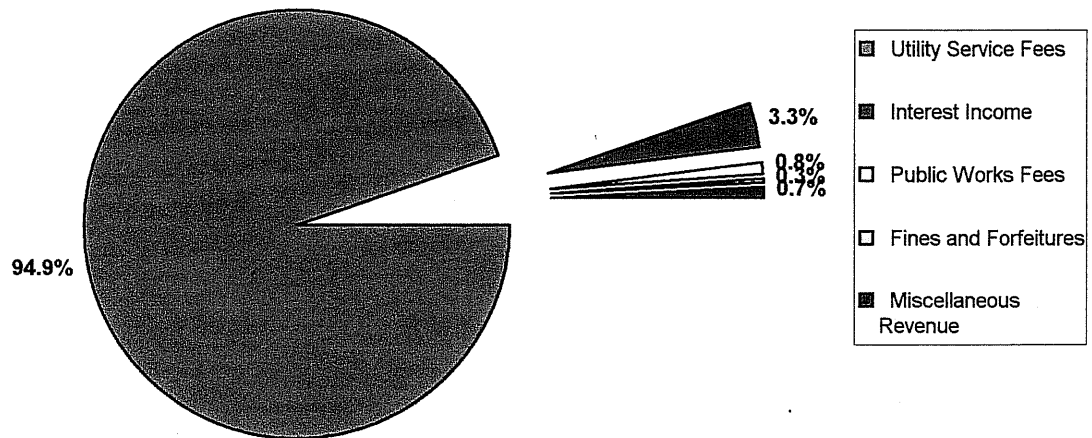
Sunnyvale provides wastewater management services as a municipal utility. Costs for collection, treatment, and discharge of wastewater are all included in the Wastewater Management Program Budget. The budget for the wastewater management system is developed and approved along with the entire City budget. Capital projects are budgeted as part of the City's Capital Improvement Program.

The City is in the process of developing a comprehensive infrastructure management plan that will document the life expectancy and replacement costs for all portions of the wastewater management system as well as all other City-owned and operated facilities. This plan will develop life schedules likely to be in the 50-100 year range that will allow for a comprehensive funding of replacement of infrastructure over a long period of time. The schedule that will be developed for the infrastructure management plan will be reviewed annually and any changes to the type of equipment or the schedule for replacement will be approved in advance by the City Council as part of the yearly budget process.

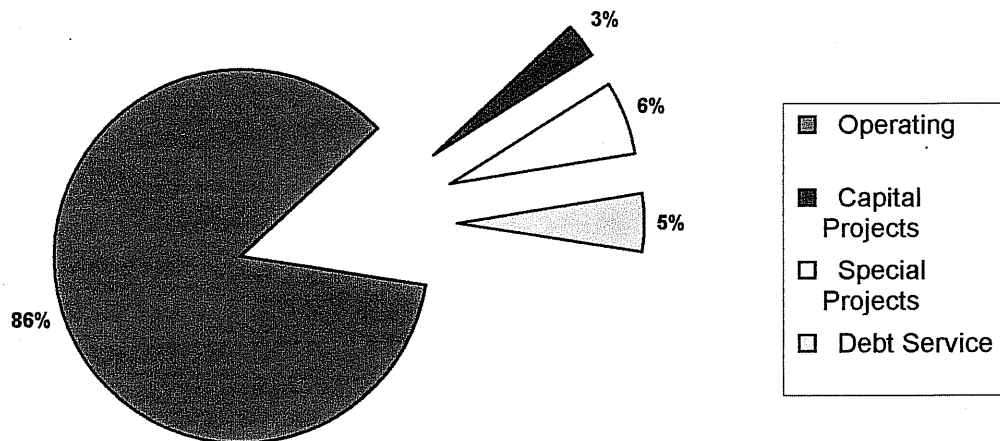
The graphs on the following page illustrate the budgeted 2001-2002 Wastewater Management Fund expenses and revenues.



## Wastewater Management Fund Revenues FY00-01



## Wastewater Management Fund Expenses FY00-01



## Wastewater Rates

The City provides wastewater management service to 56,404 customers, including: 23,650 single family residences, 30,861 multi-family units (1,638 accounts), 1,852 commercial customers, 41 significant industrial users and NASA. Most of these customers are located within city limits. However, one commercial enterprise, 1,864 single family residences, and two multi-family buildings are located outside the city.

City of Sunnyvale wastewater utility rates are based entirely on the City's costs for operating and maintaining its wastewater facilities and services. The wastewater system is operated as an independent enterprise and all expenses and revenues are accounted for separately. No tax revenues are used to cover the costs of wastewater services, nor are any wastewater revenues used to support other unrelated City programs or services. It is important to note that the practice of long term planning and the use of a rate stabilization fund have enabled the City of Sunnyvale to maintain wastewater rates at the lowest possible level by spreading the effects of anticipated operational and infrastructure costs over 20 years. The rate stabilization fund enables each of the utility funds to maintain a fairly consistent pattern of rate increases over the entire 20 years rather than experiencing volatile swings in rates which would occur due to unanticipated increases in cost in a particular year.

Each year, as part of the budget process, staff analyzes the current condition of and long-term outlook for the Wastewater Management Fund. This analysis is referred to as the 10 and 20 Year Resource Allocation Plan. It includes a review of available fund balances, state and federal environmental requirements, anticipated capital infrastructure requirements and operational costs, and a detailed inspection of significant expenditure areas (e.g. the anticipated cost of forthcoming regulations related to wastewater discharge, etc.). The results of this analysis lead to recommendations to the City Council of rates that will generate the revenues necessary to meet planned expenditures. The City attempts to keep rates as stable as possible while maintaining high quality services through long-term planning.

**Comparison of wastewater rates in March 2001  
Sunnyvale and neighboring cities**

City	Average Residential Bill Per Month*
Palo Alto	\$18.25
Los Altos	\$12.00
San Jose	\$22.33
Mountain View	\$12.82
Sunnyvale	\$16.92
Santa Clara	\$7.85
Milpitas	\$21.15
Cupertino	\$19.00
Gilroy	\$29.16
Morgan Hill	\$32.57

\*Assumes single family monthly rate. From the Sunnyvale Department of Finance

Periodically, the City reviews the methodology used to calculate the wastewater rates to ensure that the rates reflect actual cost. A cost of service study was done in Fiscal Year 2000-2001. The City hired a consultant to conduct an independent analysis of the City's wastewater rate structure, connection fees, and long range finances for the wastewater enterprise. On March 27, 2001, the City Council adopted the rate structure that resulted from the study.

The study revised estimates for flows and treatment parameters and recommended adjustments to the wastewater rate structure to ensure costs are recovered on a equitable basis from the different customer classes.

The study also concluded that wastewater rates should be designed to generate sufficient revenue to ensure financial health and stability of the utility, taking into account both ongoing operating needs and capital improvements. The City adopted the following guidelines in setting the new wastewater rate structure for Fiscal Year 2001-2002:

- All customers should pay a proportional share of system operating and maintenance costs.
- Each customer should be charged a rate based on the cost of providing service to that customer.
- Rates for customers with similar characteristics should be consistent.
- Total operating revenues should be sufficient to pay all costs related to system operation and maintenance, as well as administrative and debt service.
- The rates should include a provision for replacement of system facilities and infrastructure.

- The rates should comply with commitments to bondholders or other lenders.

For a more detailed description of the wastewater rate structure, see Appendix A.

## **Current Rates**

Residential customers are charged a fixed bi-monthly rate for wastewater service. Single family residences currently pay a bi-monthly rate of \$33.83. Owners of buildings with multi-family residential units are charged \$20.94 per unit regardless of whether each unit is occupied or vacant.

The current rate structure segregates commercial customer into three classifications based on sewage strength: 1) Low Strength; 2) Standard Strength; and 3) High Strength. Standard Strength Commercial customers are charged \$1.6458 per ccf of metered water use each month for wastewater service. The rate for low strength customers is \$1.4665 per ccf of water use. High strength customers (e.g. restaurants) are charged \$3.6187 per ccf.

Significant industrial users are also billed monthly based on metered water use. Their rate is determined based on actual yearly sampling data that focuses on flow, discharge of suspended solids, discharge of total organic carbon, and discharge of ammonia nitrogen.

The City has a separate contract with NASA. NASA is charged the standard commercial rate for wastewater management service.

A five-year history of wastewater charges is summarized in Appendix B. Rates were last adjusted by 5.5% on July 1, 2001. This increase reflected a need for significant capital improvements due to aging infrastructure.

# **GOALS, POLICIES** **AND ACTION STATEMENTS**

The 2001 Wastewater Management Sub-element establishes a set of integrated goals, policies and actions. It describes the actions expected of residents, industries, the business community, and City government, as directed by the following goals and policies. The Sub-element functions as a long-term planning document for policy makers when they consider solutions to specific proposals concerned with wastewater and sewage treatment. Finally, the Sub-element serves as a guide for conducting day-to-day activities.

This Sub-element is one of 23 sub-elements of seven major elements in the General Plan. The elements and sub-elements of the General Plan are interdisciplinary, so this sub-element is directly affected by other sub-elements that shape the development of housing, industry and businesses.

The goals, policies and action statements included in the Wastewater Management Sub-element are based on the following assumptions.

1. The quality of water in San Francisco Bay must meet State Water Quality Control Board standards for certain approved beneficial uses such as recreation, fish migration, habitat for water fowl, and aesthetic enjoyment.
2. The citizens of Sunnyvale want a clean city and a healthy environment.
3. The quality of the tertiary treated effluent discharged from the City's Water Pollution Control Plant must meet the standards established by regulatory agencies at all times.
4. Improvements to the City's wastewater management system should be designed, constructed and maintained so that it can safely transport all the sewage and industrial wastes generated within the City from point of origin to the Water Pollution Control Plant.
5. Improvements to the Water Pollution Control Plant should be designed, constructed and maintained, and the quantity of industrial wastes should be controlled, so that the plant operates within its capacity.

6. The wastewater collection system and the Water Pollution Control Plant must be properly maintained and not be permitted to become obsolete so that it can continue to meet regulatory standards.
7. Energy conservation and minimizing the use of chemicals are among the criteria for design, construction, enlargement and operation of the wastewater collection system and Water Pollution Control Plant.
8. Wastewater Management Revenue Fund services should be funded on a fee support basis, both for operations and maintenance and for infrastructure capital improvements and replacement.
9. Timely maintenance and infrastructure replacement practices are cost effective.

### Goals, Policies, and Action Statements

<b>Goal 3.3A</b>	Ensure that the quantity and composition of wastewater generated in the City does not exceed the capabilities of the wastewater collection system and Water Pollution Control Plant.
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#### Policy

- 3.3A.1 Water Pollution Control Plant improvements should be designed, constructed and maintained and the quantity of industrial wastes should be controlled so that the plant does not have to be expanded in excess of its capacity of 29.5 MGD.

#### Action Statements

- 3.3A.1a Monitor the generation of industrial wastes by new industries and enlargements of existing industries to ensure that the safe treatment capacity is not exceeded at any time.
- 3.3A.1b If the average flow reaches 75% of design flow, review projected flows and existing plant capacity to determine the advisability of imposing a wastewater discharge moratorium.

- 3.3A.1c Maintain a fair and equitable allocation system of Water Pollution Control Plant treatment capacity to land use categories.

**Policy**

- 3.3A.2 Ensure that wastes discharged to the wastewater collection system can be treated by existing treatment processes of the Water Pollution Control Plant.

**Action Statements**

- 3.3A.2a Provide adequate pretreatment monitoring to ensure that discharge standards are met by the discharger community.
- 3.3A.2b Maintain an active information program to inform wastewater management users of prohibited discharges, pretreatment methods, and reporting requirements.

**Goal 3.3B**

Continue to operate and maintain the wastewater collection system so that all sewage and industrial wastes generated within the City are collected and conveyed under safe and sanitary conditions to the Water Pollution Control Plant.

**Policy**

- 3.3B.1 Inspect critical points in the wastewater management system annually to ensure that the proper level of maintenance is being provided and that the flow in sewers does not exceed design capacity.

**Action Statements**

- 3.3B.1a. Jet flush the wastewater collection system on a regular basis.
- 3.3B.1b. Monitor locations where the capacity is critical in the wastewater collection system.

- 3.3B.1c. Continue the program of minimizing illegal storm connections on private property to the City wastewater collection system.
- 3.3B.1d. Continue the program of locating and correcting points of infiltration in the wastewater management system.
- 3.3B.1e. Continue to provide an optimum level of maintenance to the wastewater management system.
- 3.3B.1f. Develop and maintain accurate, up-to-date maps and records of the wastewater management system.
- 3.3B.1g. Ensure that the City's 50-year infrastructure plan provides for necessary capital improvements and replacements.

**Goal 3.3C**

Continue to operate and maintain the Water Pollution Control Plant, using cost effective methods, so that all sewage and industrial wastes generated within the City receive sufficient treatment to meet the effluent discharge and receiving water standards of regulatory agencies.

**Policy**

- 3.3C.1 Monitor Water Pollution Control Plant operations and maintenance to meet regulatory standards.

**Action Statement**

- 3.3C1a. Continue to provide water pollution control facilities, personnel, materials and utilities so that sewage and industrial waste generated within the City can be treated to meet the regulatory standards.

**Policy**

- 3.3C.2 Coordinate operating procedures with the City energy policy to optimize an alternative energy program so that minimum use and reliance are placed on outside energy sources.



**Action Statements**

- 3.3C.2a Maximize production and use of landfill gas for power production.
- 3.3C.2b. Maximize production and use of digester gas for power production.
- 3.3C.2c. Implement necessary changes to allow power production with use of landfill, digester, or natural gas, or a combination of any of the three.

**Policy**

- 3.3C.3 Actively participate in the watershed management approach to solving water quality issues of the Santa Clara Basin Watershed and the South Bay

**Action Statement**

- 3.3C.3a Continue to work with neighboring cities, state and federal agencies, and through the Watershed Management Initiative, to solve mutual water quality problems.
- 3.3C.3b Support the development of environmental regulations that have a sound scientific basis and allow for reasonable implementation.

**Policy**

- 3.3C.4 Produce quality recycled water and seek to maximize the use of this resource.

**Action Statements**

- 3.3C.4a. Produce recycled water, fulfilling California Code of Regulations Title 22 water quality standards, to meet the demand of recycled water customers.
- 3.3C.4b Maximize the efficiency of recycled water production and distribution.
- 3.3C.4c Market recycled water to potential new customers and maximize the use of recycled water within existing distribution area.

- 3.3C.4d. Annually review the usage of recycled water and the feasibility of expanding its use and distribution.
- 3.3C4e. Monitor effects of water reuse and its relationship on discharge to San Francisco Bay.
- 3.3C4f. Study feasibility of recycled water for restoration and/or enhancement of marshlands.

<b>Goal 3.3D</b>	Maintain a financially-stable wastewater management fund through a user-based fee system.
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**Policy**

- 3.3D.1 Assess connection fees to new system users to recoup the costs of excess system capacity constructed for their eventual use.
- 3.3D.2 Assess user fees based on quantity and composition of wastewater generated
- 3.3D.3 Establish appropriate reserves to ensure reliable rates and to provide capital improvements and infrastructure replacement needs.
- 3.3D.4 Annually review the wastewater rate structure.
- 3.3D.5 Bi-annually review the 50-year plan for capital improvement and replacement needs
- 3.3D.6 Continue to make landowners responsible for maintenance of sewer laterals, with the exception that the City will make repairs to laterals between property line and sewer mains caused by broken pipes and street tree roots.
- 3.3D.7 Properties outside the City limit that are served by the Sunnyvale wastewater collection system shall pay the full cost of wastewater management service. In addition to a higher rate for such special service, outside customers should also pay all costs for special maintenance and necessary repairs. This includes the use of outside plumbers, delivery of service at call back times, any expenses to the City of Sunnyvale from other jurisdictions connected to the provision of service (i.e. franchise fees), and costs for improvements to the system.

- 3.3D.8 Explore agreements with neighboring cities where the Water Pollution Control Plant would treat interjurisdictional wastewater for a fee as long as these agreements: 1) create no capacity issues 2) do not hinder future development and 3) are economically advantageous.

## **Updating the Wastewater Management Sub-element**

Periodic updating will provide the analyses, data and reviews that can be used to measure how successfully the goals, policies, and actions are being implemented. Actual updating periods will be coordinated with the goals and policies to ensure that the correct amount of monitoring is provided.

### **Annual Update**

1. Review in detail the capacity of the Water Pollution Control Plant.
2. Analyze the pretreatment program.
3. Analyze the standards of maintenance and operation of the wastewater collection system and the Water Pollution Control Plant.
4. Update the policy on generation of industrial wastes by industry.
5. Review the treatment standards achieved by the Water Pollution Control Plant.
6. Update the flow data for the primary sewer pipelines in the City.

### **Two-Year Update**

1. Review the data on illegal storm drain connections.
2. Update the long-term water conservation plan.
3. Update the schedule of infrastructure replacement.

### **Five-Year Update**

1. Review the data on flows for the entire wastewater collection system.
2. Review the data on quantities of ground and storm water inflows into the wastewater collection system.

## **INTER-RELATIONSHIPS** **WITH OTHER SUB-ELEMENTS**

The General Plan of the City of Sunnyvale is composed of seven elements: Transportation, Community Development, Environmental Management, Public Safety, Socio-Economics, Cultural, and Planning and Management. The Water Resources Sub-element is part of the Environmental Management Element that includes five other sub-elements: Air Quality, Solid Waste Management, Wastewater Management System, Noise, and Surface Runoff.

There are a total of 24 elements and sub-elements within Sunnyvale's General Plan. The inter-relationship of the Wastewater Management Sub-element with the relevant goals, policies, and action statements of those elements or sub-elements is summarized here.

### **Land Use and Transportation Sub-element**

- |                          |   |
|--------------------------|---|
| Policy R1.11             | Protect regional environmental resources through local land use practices.  |
| Action Statement R1.11.1 | Participate in state and regional activities to protect the natural environment.  |
| Action Statement R1.11.2 | Protect and preserve the diked wetland areas in the Baylands, which serve as either salt evaporation ponds or holding ponds for the wastewater treatment plant. |
| Policy C4.2              | Balance land use and transportation system carrying capacity necessary to support a vital and robust local economy.   |
| Policy C4.4              | Encourage sustainable industries that emphasize resource efficiency, environmental responsibility, and the prevention of pollution and waste.                   |

## Housing and Community Revitalization Sub-element

Goal 2.3A Foster the expansion of the housing supply to provide greater opportunities for current and future residents, given environmental, social, fiscal and land use constraints.

## Open Space Sub-element

Policy 2.2A.4 Implement innovative policies and practices that support the City's leadership in environmental affairs.

Action Statement 2.2A.4a Continue and expand the current water conservation program, and investigate the feasibility of utilizing recycled wastewater for irrigation and water features throughout the open space system.

## Housing and Community Revitalization Sub-element

Goal 2.3A Foster the expansion of the housing supply to provide greater opportunities for current and future residents, given environmental, social, fiscal, and land use constraints.

Action Statement 2.3A.1b The City will review the capacity of the infrastructure to accommodate any increase in housing intensity.

## Water Resources Sub-element

Goal 3.1D Manage potable water demand through the effective use of water rates, conservation programs and recycled water.

Policy 3.1D3 Expand opportunities for recycled water use consistent with ecology needs of the Bay and/or diminished potable water supplies.

Policy 3.1G.4 Support efforts to encourage reasonable demand-side water conservation programs.

Action Statement 3.1G.4a Support on-going state and local water conservation efforts and support legislation encouraging the installation of reasonable

water conservation devices in a building prior to transfer of title, provided there is some economic impact criteria.

### **Solid Waste Sub-element**

Policy 3.2H.2a      Extract available resources from the refuse buried at the landfill.

Action Statement 3.2H.2a      Provide landfill gas of a quality and at a flow rate suitable for energy recovery.

### **Surface Runoff Sub-element**

Goal 3.4A      Assure the reasonable protection of beneficial uses of creeks and South San Francisco Bay, established in the Regional Board's Basin Plan, and protect the environmentally sensitive areas.

Action Statement 3.4A.2d      When evaluating pollutant control measures, consider all potential impacts including effects on the storm drain system, wastewater management system, and ground water.

Action Statement 3.4A.3d      Continue outreach programs to industrial and commercial businesses to educate them on proper disposal of waste to the wastewater collection system and storm drains.

Action Statement 3.4A.4a      Encourage all residents, industrial and commercial facilities, and public agencies to report spills and illegal dumping incidents to the Water Pollution Control Plant in order to initiate an immediate response and log spills.

Policy 3.4D      Minimize the quantity of runoff and discharge of pollutants to the maximum extent practicable by integrating surface runoff controls into new development and redevelopment land use decisions.

Action Statement 3.4D.1b      Assure that all applicable development projects obtain coverage under the State Water Board's general construction activity storm water NPDES permit or under a similar regional board permit if one is adopted in the future.

**Fiscal Sub-element**

Goal 7.1B Maintain sound financial practices which meet all applicable standards and direct the City's financial resources toward meeting the City's long term needs.

Action Statement 7.1B.2c Assume the cost of replacing those improvements that were not developer-installed, such as parks, sewers, and water lines. Replacement of water and wastewater lines should be financed through the water and wastewater management funds. Replacement of streets, sidewalks, and storm drains should be financed by the General Fund.

Action Statement 7.1B.2d New improvements such as sidewalk, curb and gutter, and water and sewer lines should be funded by those directly benefiting, to the degree benefited

Action Statement 7.1B.3b Water line, wastewater, and storm drain line improvements should be designed and constructed to the size required to serve the City's capacity needs when fully developed. Water and wastewater support systems need not reflect full future demand, but should be designed to accept future load without the need to substantially redesign existing facilities.

Policy 7.1B.8: Provide a prudent level of reserves for future unexpected expenses and revenue declines; to accumulate funds to support future planned capital improvement; and to level high and low expenditure years in the 10-Year Resource Allocation Plan.

## **GLOSSARY**

BOD	Biochemical Oxygen Demand
CTR	California Toxics Rule
CMOM	Capacity, Management, Operations, Maintenance
CWA	Clean Water Act
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
FY	Fiscal Year
MGD	Million Gallons / Day
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
POTW	Publicly-Owned Treatment Works
RWQCB	Regional Water Quality Control Board
SIP	State Implementation Policy
SIU	Significant Industrial User
SSO	Site-Specific Objective
TMDL	Total Maximum Daily Load
WMI	Watershed Management Initiative



## **APPENDICES**

- Appendix A: Current Wastewater Charges
- Appendix B: 5-Year History of Wastewater Charges
- Appendix C: History of Average Influent Flow by Month (MGD)
- Appendix D: Estimated Influent Flow by Source (Million Gals)
- Appendix E: Survey of Residential Wastewater Service Charges
- Appendix F: Survey of Commercial Wastewater Service Charges

**CITY OF SUNNYVALE  
WASTEWATER SYSTEM  
Summary of Rate Structure by User Type  
Fiscal Year 2001-02**

<u>User Type</u>	<u>Rate</u>	<u>Basis for Calculation</u>
<b>Single Family Residences</b>	\$33.83	Flat Bi-monthly rate per residence
<b>Apartments/Mobile Homes</b>	\$20.94	Flat Bi-monthly rate per unit
<b>Commercial</b>		Commercial users (or "smaller quantity users"), are re-evaluated every 3-5 years as a group and costs are allocated accordingly
Standard Strength (most common users)	\$1.6458	Monthly rate per hundred cubic feet of water consumed
Low Strength	\$1.4665	Monthly rate per hundred cubic feet of water consumed
High strength	\$3.6187	Monthly rate per hundred cubic feet of water consumed
<b>Significant Industrial Users</b> (monthly rate shall not be less than the rate for Standard Strength commercial customers)		Significant Industrial Users are sampled individually each year and a rate is calculated based on their actual discharge of suspended solids, total organic carbon, ammonia nitrogen and total flow. Based on the total annual flow in hundred cubic feet divided into the sum of the following:
	\$1,567.75	per 1,000,000 gal of flow
	\$1,089.26	per 1000 lbs. of suspended solids
	\$647.44	per 1000 lbs. of total organic carbon
	\$2,015.05	per 1000 pounds of ammonia nitrogen

# Appendix B

## Appendix B City of Sunnyvale Wastewater Financing Plan and Rate Study History of Sewer Charges

Customer Class	1996/97	1997/98	1998/99	1999/00	2000/01	Unit	Billing Cycle
Adjustment		2.5%	3.0%	3.0%	7.2%		
<b>Residential</b>							bi-monthly
Single family	\$28.58	\$29.29	\$30.17	\$31.08	\$33.32	per unit	bi-monthly
Other residential	17.32	17.75	18.28	18.83	20.19	per unit	
<b>Commercial</b>							monthly
Commercial laundries	1.204	1.234	1.271	1.309	1.4032	per hcf of discharge	monthly
Restaurants	2.574	2.638	2.717	2.799	3.0005	per hcf of discharge	monthly
All other & light Industrial	1.149	1.178	1.213	1.249	1.3389	per hcf of discharge	monthly
<b>Major Contributing Industrial</b>							
Annual flat charge	16.66	17.08	17.59	18.12	19.42	per connection	
<b>Monthly Charges*</b>							monthly
Flow	859.21	880.69	907.11	934.32	1,001.59	per million gallons discharged	monthly
Total organic carbon	288.37	295.58	304.45	313.58	336.16	per 1,000 lbs discharged	monthly
Suspended solids	181.90	186.45	192.04	197.80	212.04	per 1,000 lbs discharged	monthly
Ammonia nitrogen	404.28	414.39	426.82	439.63	471.28	per 1,000 lbs discharged	monthly
<b>Maximum Month Charges*</b>							annually
Flow	111,065.36	113,841.99	117,257.25	120,774.97	129,470.77	per avg mgd of discharge in max month	annually
Total organic carbon	10.66	10.93	11.26	11.60	12.44	per lb of avg daily discharge in max month	annually
Suspended solids	19.93	20.43	21.04	21.67	23.23	per lb of avg daily discharge in max month	annually
Ammonia nitrogen	53.74	55.08	56.73	58.43	62.64	per lb of avg daily discharge in max month	annually
Minimum Industrial charge	1.1490	1.1780	1.2130	1.2490	1.3389	per hcf of discharge	monthly

\* During the calendar year.  
Source: City of Sunnyvale.

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City of Sunnyvale Wastewater Financing Plan and Rate Study  
History of Average Influent Flow by Month (mgd)

Month	1996	1997	1998	1999
January	15.63	19.41	18.16	16.30
February	17.55	17.51	23.82	17.44
March	17.12	16.00	18.62	16.82
April	16.09	16.62	17.57	16.67
May	16.11	16.14	16.81	16.16
June	15.94	16.19	16.82	16.44
July	15.27	16.27	16.58	15.99
August	15.86	16.53	16.28	15.95
September	15.26	15.90	16.03	16.15
October	15.82	15.90	16.06	15.89
November	16.03	16.86	16.08	15.63
December	16.85	17.13	16.22	15.24
Annual Average (mgd)	16.13	16.71	17.42	16.22
Total Annual Flow (MG)	5,887	6,099	6,358	5,920
Annual Increase		3.6%	4.2%	-6.9%

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Source: City of Sunnyvale NPDES Reports, Discharger Self-Monitoring Reports.

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**City of Sunnyvale Wastewater Financing Plan and Rate Study**  
**Estimated Influent Flow by Source (million gallons)**

Category	1997			1998			1999		
	MG	mgd	%	MG	mgd	%	MG	mgd	%
Residential	4,006	11.0	66%	4,257	11.7	67%	3,960	10.8	67%
Commercial	987	2.7	16%	1,002	2.7	16%	936	2.6	16%
MCIU <sup>1</sup>	792	2.2	13%	766	2.1	12%	727	2.0	12%
Infiltration/Inflow <sup>2</sup>	<u>305</u>	<u>0.8</u>	<u>5%</u>	<u>317</u>	<u>0.9</u>	<u>5%</u>	<u>296</u>	<u>0.8</u>	<u>5%</u>
Total	6,090	16.7	100%	6,342	17.4	100%	5,919	16.2	100%

1 Includes sanitary portion and groundwater cleanup sites.

2 Estimated at five percent based on CH2M Hill study.

Source: EOA Engineers.

City of Sunnyvale Wastewater Financing Plan and Rate Study  
Survey of Residential Wastewater Service Charges in 2000/01

	Monthly Rate	
	Single Family	Multi- Family
Statewide Average .....	\$19.71	na
City of Santa Clara <sup>1</sup> .....	9.20	9.20
City of Los Altos .....	12.00	12.00
City of Mountain View .....	12.82	12.82
City of Palo Alto .....	14.00	14.00
West Valley Sanitation District .....	16.50	11.50
City of Sunnyvale (current) .....	16.66	10.10
City of Sunnyvale (proposed 7/1/2001) .....	17.06	10.56
Cupertino Sanitary District .....	18.00	18.00
City of San Jose .....	18.96	12.71
City of Milpitas .....	21.15	15.10
City of Gilroy .....	29.16	20.71
City of Morgan Hill .....	<u>32.57</u>	<u>22.33</u>
Average <sup>2</sup> .....	18.27	14.41

1 Includes \$1.85 utility excise tax collected for the sewer enterprise.

2 Includes the City of Sunnyvale's current rate, but not the proposed rate for 2001/02.

Source: State Water Resources Control Board, Wastewater User Charge Survey FY 99/00  
and Bartle Wells Associates.

City of Sunnyvale Wastewater Financing Plan and Rate Study  
Survey of Commercial Wastewater Service Charges in 2000/01

	General Commercial		Restaurant or High-Strength	
	Fixed	Variable <sup>1</sup>	Fixed	Variable <sup>1</sup>
City of Santa Clara <sup>2</sup>		\$0.82 / ccf		\$2.05 / ccf
City of Sunnyvale (current)		\$1.34 / ccf		\$3.00 / ccf
City of Milpitas	\$3.57	\$1.40 / ccf	\$3.57	\$3.11 / ccf
City of Sunnyvale (proposed 7/1/2001)		\$1.59 / ccf		\$3.66 / ccf
Cupertino Sanitary District		\$1.62 / ccf		\$3.69 / ccf
City of San Jose <sup>3</sup>		\$1.72 / ccf		\$3.07 / ccf
West Valley Sanitation District		\$1.75 / ccf		\$3.26 / ccf
City of Mountain View		\$1.87 / ccf		\$2.29 / ccf
City of Morgan Hill	Mtr Chg <sup>4</sup>	\$2.45 / ccf	Mtr Chg <sup>4</sup>	\$7.84 / ccf
City of Palo Alto	\$14.00	\$2.74 / ccf	\$14.00	\$5.15 / ccf
City of Gilroy	\$7.93	\$3.33 / ccf	\$64.79	\$8.30 / ccf
City of Los Altos	Flat Rate <sup>5</sup>		Flat Rate <sup>6</sup>	

1 Per hcf of metered water use unless noted otherwise.

2 Sewage volume estimated at 90 percent of metered water use.

3 Monthly charges are based on annualized winter water use.

4 Meter charge typically ranges from \$12.09 for a 3/4-inch meter to \$72.08 for a 2-inch meter.

5 Flat rate of \$22.10 plus \$11.05 per each five employees over five.

6 Flat rate of \$25.95 plus \$5.80 per each 20 seats after the first 20.

Source: Bartle Wells Associates